


# Armed Forces College of Medicine

**AFCM**


GOOD
morning




# Pathology of non neoplastic skin disorders

**By**

**Noha El Anwar**

**Ass. Professor of pathology**

# INTENDED LEARNING OBJECTIVES (ILO)



**By the end of this lecture the student will be able to:**

1. Define gross and microscopic terms applied in skin pathology.
2. Discuss the pathology of non neoplastic skin lesions.
3. Analyse the given clinical and laboratory findings to reach diagnosis of pathological conditions related to non neoplastic skin lesions
4. Classify neoplastic skin disorders into benign, locally aggressive and malignant.
5. Describe pathology of neoplastic skin lesions

# Lecture Plan



1. Part 1  (5 min) classification of skin lesions
2. Part 2  (35 min) Macroscopic and microscopic terms
3. Part 3  (5 min) Tumor like lesions and epithelial skin cysts
4. Lecture Quiz (5 min)

# Classification of skin lesions



- Skin lesions
  - Epidermal
  - Dermal
  - Skin adnexal
  - Migrants

# Histology of normal skin



## **Components:**

- **Squamous epithelial cells (keratinocytes**) constitute the majority of epidermal cells and synthesize the keratin mechanical barrier.
- **Melanocytes** produce melanin pigment to screen ultraviolet (UV) light.
- **Dendritic cells** (called Langerhans cells in the epidermis) process and present antigen to activate the immune system
- **Merkel cells** also reside in the epidermal basal layer.

## **Skin adnexa:**



- **Sweat glands , sebaceous glands & Hair follicles**

# Normal skin



Epidermis

Dermis

Hypodermis (subcutaneous fat)

https://www.youtube.com/watch?v=Orumw-PyNjw

# Normal skin



Mature corneocyte
Stratum corneum
Stratum granulosum
Stratum spinosum
Stratum basale
Immature keratinocyte
Dermis

https://www.pinterest.com/summerekelund/histology-skin/

# Normal skin



## Epidermis

**Keratinocytes**

- **Horny layer**
- **Granular layer**
- **Spinous cell layer** (polyhydral cells, esinophilic)
- **Basal layers** (single layer of columnar cells perpendicular to BM, basophilic, scattered melanocytes in between)

Horny L

Granular L

spinous

melanocytes

Basal L.

https://tissupath.com.au/medical-student-subjects-skin/

# KERATINOCYTES

› *the building blocks of the tough, fibrous protein keratin*



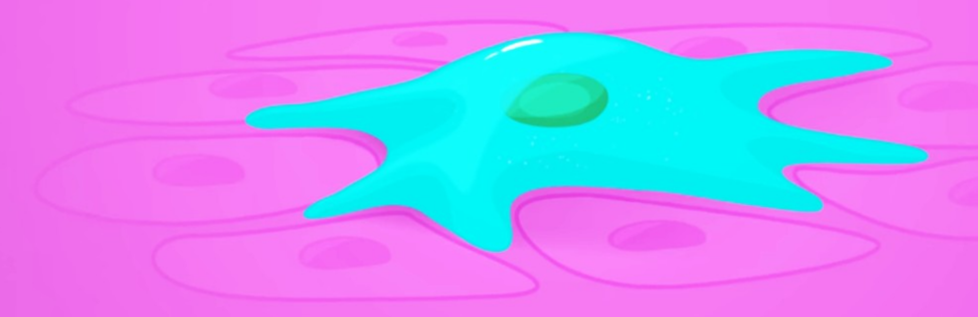


# MELANOCYTE

› *synthesizes melanin*

# LANGERHANS CELLS

› *ingesting the unwanted invaders*



# MERKEL CELLS

› *combine with nerve endings to create a sensory receptor for touch*

# Macroscopic terms



- **Vesicle** Elevated fluid-filled lesion less than 5 mm
- **Bulla** Elevated fluid-filled lesion more than 5 mm
- **Macule** Flat, circumscribed area 5 mm or more distinguished by coloration
- **Nodule** Elevated dome-shaped lesion with depth up to 2 cm
- **Papule** Elevated lesion 5 mm or more
- **Pustule** Discrete, pus-filled raised lesion
- **Wheal** Pruritic, elevated, erythematous lesion secondary to dermal edema

# Define gross and microscopic terms applied in skin pathology.



**Complete**

- Flat, circumscribed area 5 mm or more distinguished by coloration is……..
  Macule

- Discrete, pus-filled raised lesion is ……..
  Pustule



# Macroscopic terms









http://tinambarber.info/736b696e/skin-wheal.html

https://www.studyblue.com/notes/note/n/describing-skin-lesions/deck/152306

# Macroscopic terms



Vesicle

Bullae

Papule / nodule

Pustule

https://www.cram.com/flashcards/final-2376889

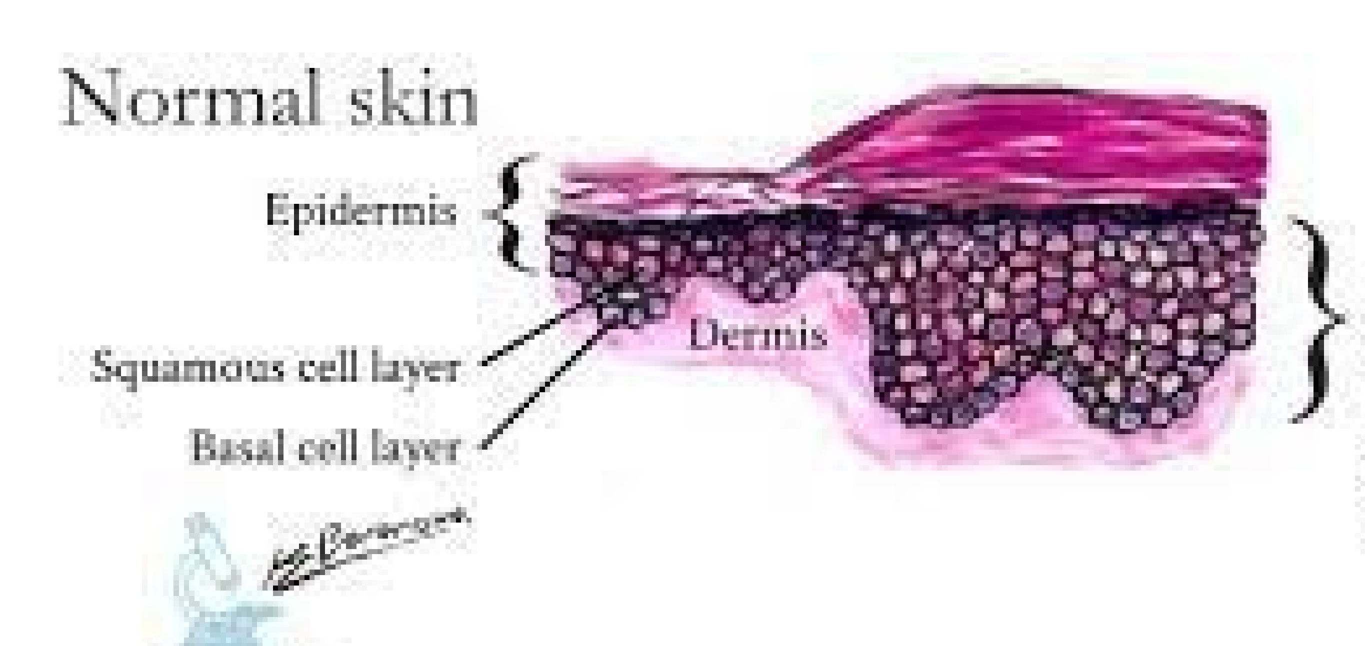
https://ui-ex.com/explore/bullae-clipart-vesicle/

https://www.memorangapp.com/flashcards/168276/MS3%3A+Derm+Vocab/

# Microscopic terms

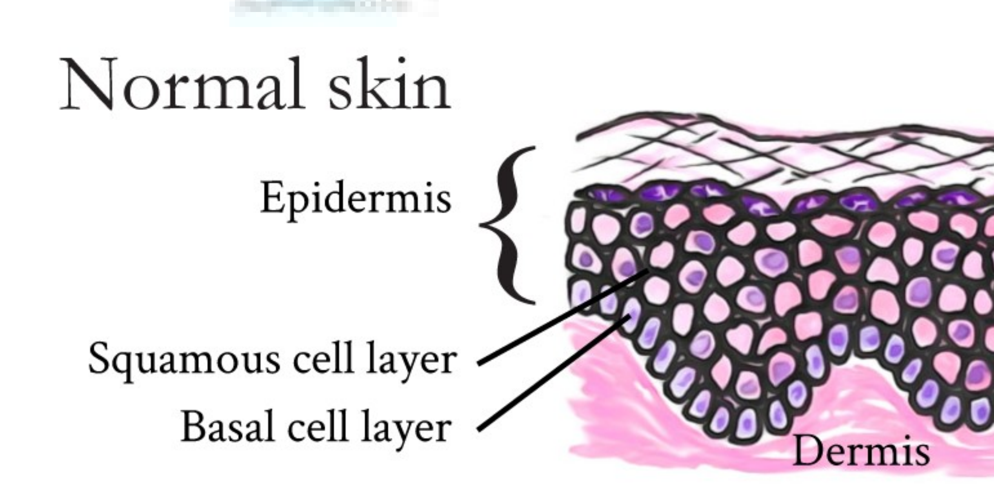


- **Acanthosis** Epidermal hyperplasia
- **Hyperkeratosis** Stratum corneum thickening, often with aberrant keratinization
- **Parakeratosis** Stratum corneum keratinization with retained nuclei
- **Erosion** Focal incomplete epidermal loss
- **Ulceration** Focal, complete epidermal loss
- **Spongiosis** Epidermal intercellular edema




Acanthosis

Thickening of the epidermis caused by an increased number of squamous cells




Keratin layer



Hyperkeratosis

Thickening of the keratin layer



NORMAL

NO NUCLEI IN MOST SUPERFICIAL KERATINOCYTES

PARAKERATOSIS

NUCLEI PRESENT IN MOST SUPERFICIAL KERATINOCYTES

Normal skin

Squamous cell layer

Basal cell layer

Epidermis

Dermis

Squamous cells are tightly packed together

Spongiosis

Fluid pushing apart squamous cells

Fluid can accumulate in small blisters, called microvesicles

https://www.mypathologyreport.ca/wp-content/uploads/2020/07/Hyperkeratosis.png

# Examples of tumor like skin les

- **<u>Seborrheic keratosis</u> :**

- Common, benign keratinocyte proliferation of middle aged and elderly

- Occur on the trunk, head, neck, and the extremities.

**Clinical:** waxy, brown slow growing papule

**Histologic:**

-**Proliferation of basaloid keratinocytes** w

atypia





https://www.healthline.com/health/seborrheic-keratosis

# Epithelial skin cysts



- Epithelial cysts are common lesions
- Presenting as **well-circumscribed**, **firm subcutaneous nodules** formed by down growth and cystic expansion of epidermal or follicular epithelium.

# Epithelial skin cysts



Lesions are filled with **keratin** and variable amounts of **lipid** and debris from sebaceous secretions; they are subclassified based on the cyst wall characteristics:

- **Epidermal cyst**: Wall is identical to normal epidermis.
- **Pilar (trichilemmal) cyst**: Wall resembles follicular epithelium (i.e., without a granular cell layer).

# Epithelial skin cysts



**Epidermal cyst**

http://www.pathologyoutlines.com/topic/skintumornonmelanocytickeratinouscystepidermal.html

**Dermoid cyst**

©2010. The University of Iowa

http://www.pathologyoutlines.com/topic/skintumornonmelanocyticdermoidcyst.html

# Epithelial skin cysts



**Pilar cyst (Trichilemmal)**

http://www.pathologyoutlines.com/topic/skintumornonmelanocytickeratinouscysttrichilemmal.html?mobile=off



# Tumors of epidermis

- **Benign**

Squamous cell papilloma.

- **Locally malignant**

Basal cell carcinoma

- **Malignant**

Squamous cell carcinoma

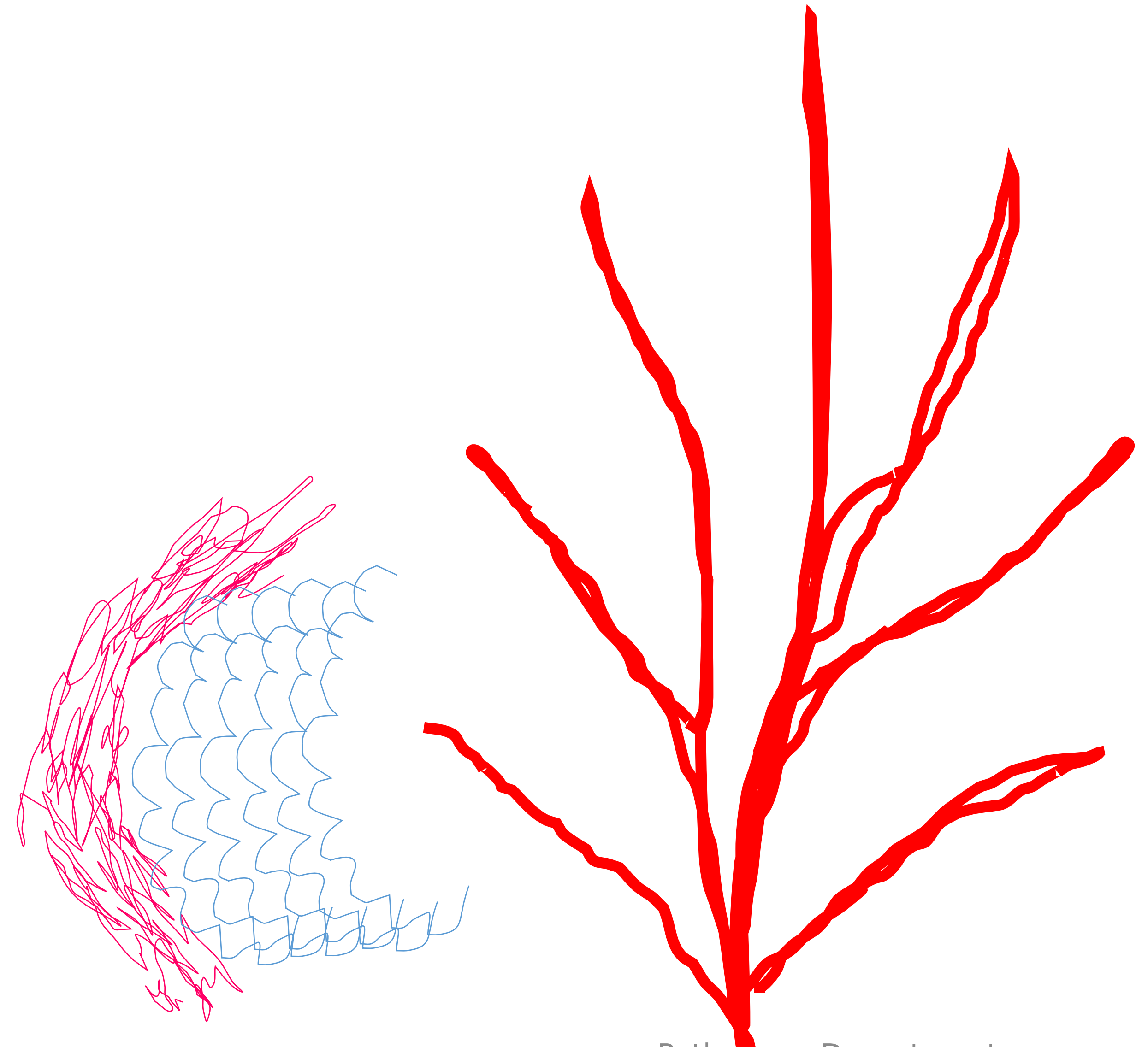
# Benign skin tumors



## Squamous cell papilloma

### What is a papilloma?

Epithelial tumor forming gross or microscopic fingerlike projections



# Benign skin tumors



## Squamous cell papilloma (warts /verrucae)

**caused by human papilloma virus (HPV).**

- **<u>Gross picture:</u>**

**<u>Verrucae vulgaris</u>** (common wart) are exophytic growths which occur anywhere on the skin, mostly on fingers.

- Genital warts with low malignant potential are caused by distinct HPV types (low-risk types, e.g., **<u>HPV-6 and HPV-11</u>**).
- Cervical squamous cell cancers contain HPV **<u>types 16 or 18</u>** in more than 90% of cases

# Benign skin tumors



## Squamous cell papilloma (warts /verrucae)



https://nhathuoctrongsinh.com/sui-mao-ga-o-mat-nhung-dau-hieu-nguy-hiem-khong-the-bo-qua/



https://step2.medbullets.com/dermatology/120054/cutaneous-warts-verrucae

# Benign skin tumors



## Squamous cell papilloma
### (warts /verrucae)



**Microscopic picture**

- Branching vascularized connective tissue core
- Covered by thickened keratinized stratified squamous epithelium.

http://traffic-club.info/2018simage-squamous-papilloma-histology.awp

# Benign skin tumors



Acanthosis

Hyperkeratosis

Blood vessels

Branching core of connective tissue

http://www.pathologyatlas.com

https://www.studyblue.com/notes/note/n/vulva-and-vagina-pathology/deck/5391635

https://iliveok.com/health/papillomaconjunctiva_107225i15936.html

# Quiz



**<u>True of false</u>**

1. **Pus filled raised skin lesion is a papule**
2. **Dermoid cyst wall is identical to the epidermis**

# Quiz



**<u>True of false</u>**

1. **Pus filled raised skin lesion is a ~~papule~~ pustule**
2. **Epidermal ~~Dermoid~~ cyst wall is identical to the epidermis**

- **Seborrheic keratosis and cutaneous horn:** are tumor like skin lesion




**Epithelial skin cysts:** Lesions are filled with **keratin** and variable amounts of **lipid** and debris from sebaceous secretions; they are subclassified based on the cyst wall characteristics:

- **Epidermal cyst**: Wall is identical to normal epidermis.
- **Pilar (trichilemmal) cyst:** Wall resembles follicular epithelium (i.e., without a granular cell layer).
- **Dermoid cyst:** Wall is similar to epidermis


Thank
you

# SUGGESTED TEXTBOOKS



1. Pocket companion to robbins and cotran pathologic basis of disease eighth edition, 2017, isbn: 978-1-4160-5454-2 (P590-611)
2. Kaplan step 1 pathology lecture notes 2017 (P.78-98)